## SEQUENCE LISTING

	Anderson, Marilyn A. Atkinson, Angela H. Heath, Robyn L. Clarke, Adrienne E.	
<120>	PROTEINASE INHIBITOR, PRECURSOR THEREOF AND GENETIC SEQUENCES ENCODING SAME	
<130>	9748B	
	09/431,500 1999-11-01	
	08/454,295 1995-09-01	
<160>	16	
<170> 1	PatentIn Ver. 2.1	
<210> 1 <211> 1 <212> I <213> N	1104	
<400> 1	1	
aaggctt	gta cettaaactg tgatecaaga attgeetatg gagtttgeee gegtteagaa	60
	aga atgateggat atgeaceaae tgttgegeag geaegaaggg ttgtaagtae	120
ttcagtga	atg atggaacttt tgtttgtgaa ggagagtctg atcctagaaa tccaaaggct	180
tgtacct	taa actgtgatcc aagaattgcc tatggagttt gcccgcgttc agaagaaaag	240
aagaatga	atc ggatatgcac caactgttgc gcaggcacga agggttgtaa gtacttcagt	300
gatgatgo	gaa cttttgtttg tgaaggagag tctgatccta gaaatccaaa ggcttgtcct	360
cggaatto	gcg atccaagaat tgcctatggg atttgcccac ttgcagaaga aaagaagaat	420
gatcggat	tat gcaccaactg ttgcgcaggc aaaaagggtt gtaagtactt tagtgatgat	480
ggaacttt	ttg tttgtgaagg agagtctgat cctaaaaatc caaaggcctg tcctcggaat	540
tgtgatgg	gaa gaattgccta tgggatttgc ccactttcag aagaaaagaa	600
atatgcac	cca actgctgcgc aggcaaaaag ggttgtaagt actttagtga tgatggaact	660
tttgtttg	gtg aaggagagtc tgatcctaaa aatccaaagg cttgtcctcg gaattgtgat	720
ggaagaat	ttg cctatgggat ttgcccactt tcagaagaaa agaagaatga tcggatatgc	780
acaaactg	gtt gcgcaggcaa aaagggctgt aagtacttta gtgatgatgg aacttttgtt	840

																tggaa		900
	ati	tgcc	tatg	gaa	tttg	ccc	actt	tcag	aa g	gaaaa	gaag	a at	.gatc	ggat	atg	cacca	at	960
	ggi	ttgc	gcag	gca	agaa	ggg	ctgt	aagt	ac t	ttag	tgat	g at	ggaa	cttt	tat	ttgtga	aa	1020
	gga	agaa	tctg	aat	atgc	cag	caaa	gtgg	at g	raata	tgtt	g gt	gaag	tgga	gaa	tgatct	c	1080
				agg									•					1104
	<21 <21 <21 <22 <22	12> 13> 20> 21>	136 DNA Nico				a											
		00>		, (	1200	, ,												
			_	·														
																ggaat	g	60
										,	Lys 1	Ala	ı Cys	Thr	Let 5			114
(	tgt Cys	gat Asp	cca Pro	aga Arg 10	11.6	gcc Ala	tat Tyr	gga Gly	gtt Val 15	L Cys	ccg Pro	cgt Arg	tca Ser	gaa Glu 20	Glu	aag Lys		162
ì	aag Lys	aat Asn	gat Asp 25	ALG	ata Ile	tgc Cys	acc Thr	aac Asn 30	tgt Cys	tgc Cys	gca Ala	ggc Gly	acg Thr	Lys	ggt Gly	tgt Cys		210
Ī	aag Lys	tac Tyr 40		agt Ser	gat Asp	gat Asp	gga Gly 45	TIIL	ttt Phe	gtt Val	tgt Cys	gaa Glu 50	gga Gly	gag Glu	tct Ser	gat Asp		258
F	ro 55	aga Arg	aat Asn	cca Pro	aag Lys	gct Ala 60	tgt Cys	acc Thr	tta Leu	aac Asn	tgt Cys 65	gat Asp	cca Pro	aga Arg	att Ile	gcc Ala 70		306
t T	at yr	gga Gly	gtt Val	Cys	ccg Pro 75	ALG	tca Ser	gaa Glu	gaa Glu	aag Lys 80	aag Lys	aat Asn	gat Asp	cgg Arg	ata Ile 85	tgc Cys		354
a T	cc hr	aac Asn	tgt Cys	tgc Cys 90	gca Ala	ggc Gly	acg Thr	aag Lys	ggt Gly 95	tgt Cys	aag Lys	tac Tyr	ttc Phe	agt Ser 100	gat Asp	gat Asp		402
g G	ga ly	act Thr	ttt Phe 105	gtt Val	tgt Cys	gaa Glu	gga Gly	gag Glu 110	tct Ser	gat Asp	cct Pro	aga Arg	aat Asn 115	cca Pro	aag Lys	gct Ala		450
t (	, -	cct Pro 120	cgg Arg	aat Asn	tgc Cys	gat Asp	cca Pro 125	aga Arg	att Ile	gcc Ala	tat Tyr	ggg Gly 130	att Ile	tgc Cys	cca Pro	ctt Leu		498

gc. Ala 13	2 GI	a gaa u Glu	a aaq ı Lys	g aac 5 Lys	aat Asr 140	ı ASÇ	cgo Aro	g ata g Ile	a tgo e Cys	c acc Thr 145	: Asr	tgi Cys	t tgo s Cys	c gca s Ala	ggc Gly 150	546
aaa Lys	a aaq s Lys	g ggt s Gly	tgt Cys	aag Lys 155	туг	ttt Phe	agt Ser	gat Asp	gat Asp 160	o Gly	a act	ttt Phe	gtt Val	tgt Cys 165	gaa Glu	594
Gl)	a gaq / Glu	g tct 1 Ser	gat Asp 170	PIO	aaa Lys	aat Asn	cca Pro	aag Lys 175	Ala	tgt Cys	cct Pro	cgg Arg	aat Asn 180	Cys	gåt Asp	642
gga Gly	a aga ⁄ Arg	att Ile 185	мта	tat Tyr	ggg Gly	att	tgc Cys 190	Pro	ctt Leu	tca Ser	gaa Glu	gaa Glu 195	Lys	aag Lys	aat Asn	690
gat Asp	cgg Arg 200	TTE	tgc Cys	acc Thr	aac Asn	tgc Cys 205	tgc Cys	gca Ala	ggc Gly	aaa Lys	aag Lys 210	ggt Gly	tgt Cys	aag Lys	tac Tyr	738
ttt Phe 215	DCI	gat Asp	gat Asp	gga Gly	act Thr 220	ttt Phe	gtt Val	tgt Cys	gaa Glu	gga Gly 225	gag Glu	tct Ser	gat Asp	cct Pro	aaa Lys 230	786
aat Asn	cca Pro	aag Lys	gct Ala	tgt Cys 235	cct Pro	cgg Arg	aat Asn	tgt Cys	gat Asp 240	gga Gly	aga Arg	att Ile	gcc Ala	tat Tyr 245	ggg Gly	834
att Ile	tgc Cys	cca Pro	ctt Leu 250	tca Ser	gaa Glu	gaa Glu	aag Lys	aag Lys 255	aat Asn	gat Asp	cgg Arg	ata Ile	tgc Cys 260	aca Thr	aac Asn	882
tgt Cys	tgc Cys	gca Ala 265	ggc Gly	aaa Lys	aag Lys	ggc Gly	tgt Cys 270	aag Lys	tac Tyr	ttt Phe	agt Ser	gat Asp 275	gat Asp	gga Gly	act Thr	930
ttt Phe	gtt Val 280	tgt Cys	gaa Glu	gga Gly	gag Glu	tct Ser 285	gat Asp	cct Pro	aga Arg	aat Asn	cca Pro 290	aag Lys	gcc Ala	tgt Cys	çct Pro	978
cgg Arg 295	aat Asn	tgt Cys	gat Asp	gga Gly	aga Arg 300	att Ile	gcc Ala	tat Tyr	gga Gly	att Ile 305	tgc Cys	cca Pro	ctt Leu	tca Ser	gaa Glu 310	1026
gaa Glu	aag Lys	aag Lys	ASII	gat Asp 315	cgg Arg	ata Ile	tgc Cys	Thr	aat Asn 320	tgt Cys	tgc Cys	gca Ala	ggc Gly	aag Lys 325	aag Lys	1074
ggc Gly	tgt Cys	aag Lys	tac Tyr 330	ttt Phe	agt Ser	gat Asp	gat Asp	gga Gly 335	act Thr	ttt Phe	att Ile	tgt Cys	gaa Glu 340	gga Gly	gaa Glu	1122
tct Ser	gaa Glu	tat Tyr 345	gcc Ala	agc Ser	aaa Lys	vaı .	gat Asp 350	gaa Glu	tat Tyr	gtt Val	Gly ·	gaa Glu 355	gtg Val	gag Glu	aat Asn	1170
nsp	ctc Leu 360	cag Gln	aag Lys	tct a Ser 1	Lys	gtt d Val 2 365	gct ( Ala	gtt Val	tcc Ser	taag	tcct	aa c	taat	aata	t	1220
gtag	tcta	tg t	atgaa	aacaa	a ago	gcato	gcca	ata	tgct	ctg	tctt	gcct	gt a	atct	gtaat	1280

ato	ggtag	ıtgg	agct	tttc	ca c	tgcc	etgti	ct aa	ataaq	gaaat	gga	agcad	ctag	ttt	gttttag	1340
ttá	aaaa	aaa	aaaa	aaaa	ıaa											1360
<2: <2:	10> 11> 12> 13>	368 PRT	otia	na a	lata	ı										
<4(	>00	3												٠		
Lys 1	Ala	Суз	Thr	Leu 5	Asn	Cys	Asp	Pro	Arg	Ile	: Ala	Туг	Gly	v Val	. Суз	
Pro	Arg	Ser	Glu 20	Glu	Lys	Lys	Asn	Asp 25		Ile	Cys	Thr	Asr 30		Cys	
Ala	Gly	Thr 35	Lys	Gly	Cys	Lys	Tyr 40	Phe	Ser	Asp	Asp	Gly 45		Phe	· Val	
Cys	Glu 50	Gly	Glu	Ser	Asp	Pro 55	Arg	Asn	Pro	Lys	Ala 60		Thr	Leu	Asn	
Cys 65	Asp	Pro	Arg	Ile	Ala 70	Туг	Gly	Val	Cys	Pro 75	Arg	Ser	Glu	Glu	Lys 80	
Lys	Asn	Asp	Arg	11e 85	Cys	Thr	Asn	Cys	Cys 90	Ala	Gly	Thr	Lys	Gly 95	Cys	
Lys	Туr	Phe	Ser 100	Asp	Asp	Gly	Thr	Phe 105	Val	Cys	Glu	Gly	Glu 110	Ser	Asp	
Pro	Arg	Asn 115	Pro	Lys	Ala	Cys	Pro 120	Arg	Asn	Cys	Asp	Pro 125	Arg	Ile	Ala	
Tyr	Gly 130	Ile	Cys	Pro	Leu	Ala 135	Glu	Glu	Lys	Lys	Asn 140	Asp	Arg	Ile	Cys	
Thr 145	Asn	Сув	Cys	Ala	Gly 150	Lys	Lys	Gly	Cys	Lys 155	Tyr	Phe	Ser	Asp	Asp 160	
Gly	Thr	Phe	Val	Cys 165	Glu	Gly	Glu	Ser	Asp 170	Pro	Lys	Asn	Pro	Lys 175	Ala	
Суѕ	Pro	Arg	Asn 180	Cys	Asp	Gly	Arg	Ile 185	Ala	Tyr	Gly	Ile	Cys 190	Ьio	Leu	
Ser	Glu	Glu 195	Lys	Lys	Asn	qsA	Arg. 200	Ile	Cys	Thr	Asn	Cys 205	Cys	Ala	Gly	
Lys	Lys 210	Gly	Cys	Lys	Tyr	Phe 215	Ser	Asp	Asp	Gly	Thr 220	Phe	Val	Cys	Glu	
Gly 225	Glu	Ser	Asp	Pro	Lys 230	Asn	Pro	Lys	Ala	Cys 235	Pro	Arg	Asn	Cys	Asp 240	
Gly	Arg	Ile	Ala	Tyr 245	Gly	Ile	Cys	Pro	Leu 250	Ser	Glu	Glu	Lys	Lys 255	Asn	
Asp	Arg	Ile	Cys 260	Thr	Asn	Cys	Cys	Ala 265	Gly	Lys	Lys	Gly	Cys	Lys	Tyr	

Phe Ser Asp Asp Gly Thr Phe Val Cys Glu Gly Glu Ser Asp Pro Arg 275 280 285

Asn Pro Lys Ala Cys Pro Arg Asn Cys Asp Gly Arg Ile Ala Tyr Gly 290 295 300

Ile Cys Pro Leu Ser Glu Glu Lys Lys Asn Asp Arg Ile Cys Thr Asn 305 310 315 320

Phe Ile Cys Glu Gly Glu Ser Glu Tyr Ala Ser Lys Val Asp Glu Tyr 340 345 350

Val Gly Glu Val Glu Asn Asp Leu Gln Lys Ser Lys Val Ala Val Ser 355 360 365

<210> 4

<211> 24

<212> PRT

<213> Nicotiana alata

<400> 4

Lys Ala Cys Thr Leu Asn Cys Asp Pro Arg Ile Ala Tyr Gly Val Cys  $1 \hspace{1cm} 5 \hspace{1cm} 10 \hspace{1cm} 15$ 

Pro Arg Ser Glu Glu Lys Lys Asn

<210> 5

<211> 58

<212> PRT

<213> Nicotiana alata

<400> 5

Asp Arg Ile Cys Thr Asn Cys Cys Ala Gly Thr Lys Gly Cys Lys Tyr  $1 \hspace{1cm} 5 \hspace{1cm} 10 \hspace{1cm} \cdot 15$ 

Phe Ser Asp Asp Gly Thr Phe Val Cys Glu Gly Glu Ser Asp Pro Arg 20 25 30

Asn Pro Lys Ala Cys Thr Leu Asn Cys Asp Pro Arg Ile Ala Tyr Gly 35 40 45

Val Cys Pro Arg Ser Glu Glu Lys Lys Asn 50 55

<210> 6

<211> 58

<212> PRT

<213> Nicotiana alata

<400> 6

Asp Arg Ile Cys Thr Asn Cys Cys Ala Gly Thr Lys Gly Cys Lys Tyr 1 5 10 15

Phe Ser Asp Asp Gly Thr Phe Val Cys Glu Gly Glu Ser Asp Pro Arg 20 25 30

Asn Pro Lys Ala Cys Pro Arg Asn Cys Asp Pro Arg Ile Ala Tyr Gly 35 40 45

Ile Cys Pro Leu Ala Glu Glu Lys Lys Asn 50 55

<210> 7

<211> 58

<212> PRT

<213> Nicotiana alata

<400> 7

Asp Arg Ile Cys Thr Asn Cys Cys Ala Gly Lys Lys Gly Cys Lys Tyr

1 10 15

Phe Ser Asp Asp Gly Thr Phe Val Cys Glu Gly Glu Ser Asp Pro Lys 20 25 30 ...

Asn Pro Lys Ala Cys Pro Arg Asn Cys Asp Gly Arg Ile Ala Tyr Gly 35 40 45

Ile Cys Pro Leu Ser Glu Glu Lys Lys Asn 50 54

<210> 8

<211> 58

<212> PRT

<213> Nicotiana alata

<400> 8

Asp Arg Ile Cys Thr Asn Cys Cys Ala Gly Lys Lys Gly Cys Lys Tyr
1 10 .15

Phe Ser Asp Asp Gly Thr Phe Val Cys Glu Gly Glu Ser Asp Pro Lys 20 25 30

Asn Pro Lys Ala Cys Pro Arg Asn Cys Asp Gly Arg Ile Ala Tyr Gly 35 40 45

Ile Cys Pro Leu Ser Glu Glu Lys Lys Asn 50 55

<210> 9

<211> 58

<212> PRT

<213> Nicotiana alata

<400> 9

Asp Arg Ile Cys Thr Asn Cys Cys Ala Gly Lys Lys Gly Cys Lys Tyr  $1 \hspace{1cm} 5 \hspace{1cm} 10 \hspace{1cm} 15$ 

Phe Ser Asp Asp Gly Thr Phe Val Cys Glu Gly Glu Ser Asp Pro Arg 20 25 30

Asn Pro Lys Ala Cys Pro Arg Asn Cys Pro Gly Arg Ile Ala Tyr Gly 35 40 45

Ile Cys Pro Leu Ser Glu Glu Lys Lys Asn
50
55

<210> 10

<211> 54

<212> PRT

<213> Nicotiana alata

<400> 10

Asp Arg Ile Cys Thr Asn Cys Cys Ala Gly Lys Lys Gly Cys Lys Tyr
1 15

Phe Ser Asp Asp Gly Thr Phe Ile Cys Glu Gly Glu Ser Glu Thr Ala 20 25 30

Ser Lys Val Asp Glu Tyr Val Gly Glu Val Glu Asn Asp Leu Gln Lys 35 40 45

Ser Lys Val Ala Val Ser 50

<210> 11

<211> 13

<212> PRT

<213> Nicotiana alata

<400> 11

Asp Arg Ile Cys Thr Asn Cys Cys Ala Gly Thr Lys Gly  $1 \hspace{1cm} 5 \hspace{1cm} 10$ 

<210> 12

<211> 13

<212> PRT

<213> Nicotiana alata

<400> 12

Asp Arg Ile Cys Thr Asn Cys Cys Ala Gly Lys Lys Gly

<210> 13

<211> 6

<212> PRT

```
<213> Nicotiana alata
<400> 13
Lys Ala Cys Thr Leu Asn
<210> 14
<211> 5
<212> PRT
<213> Nicotiana alata
<400> 14
Glu Glu Lys Lys Asn
  1
<210> 15
<211> 4
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial
      Sequence: Protease-sensitive peptide
<220>
<221> UNSURE
<222> (1)..(2)
<223> Xaa can be any amino acid
<400> 15
Xaa Xaa Asn Asp
 1
<210> 16
<211> 23
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial
      Sequence: Protease-sensitive peptide
<220>
<221> UNSURE
<222> (1)
<223> Xaa is Ile or Val
<220>
<221> UNSURE
```

<222> (4) <223> Xaa is Arg or Leu

<220>

<221> UNSURE

<222> (5) <223> Xaa is Ser or Ala

<220>

<221> UNSURE

<222> (21)

<223> Xaa is Thr or Lys

<400> 16

Xaa Cys Pro Xaa Xaa Glu Glu Lys Lys Asn Asp Arg Ile Cys Thr Asn 10

Cys Cys Ala Gly Xaa Lys Gly 20